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Gary Cao

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EXAMINER

RAO, SHRINIVAS H

ART UNIT

PAPER NUMBER

2814

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|-----------------------------------|--|
| Office Action Summary | Application No. 09/752,359 | Applicant(s) CAO ET AL. | |
| | Examiner STEVEN H. RAO | Art Unit 2814 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/101/2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 October 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.
2. Applicant's submission filed on 10/10/2008 has been entered.
3. Therefore Claim 1 as amended by the amendment and claims 2-11 as previously recited are currently pending in the Application.
4. Claims 12 to 16 were previously cancelled.

Information Disclosure Statement

To date no IDS has been filed in this case.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5 are rejected under 35 U.S.C. 102(e) as being unpatentable over Satya et al.
(U.S. Patent No. 6,528,818, herein after Satya) .

With respect to claim 1 Satya describes a structure disposed

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near each corner of a die in a space at an intersection of a horizontal scribe line and a vertical scribe line comprising:

a first set of features, at a particular layer of processing a wafer, (Satya abstract line 2-4, Satya col. 37 lines 28 to 30 layers figs. 6 to 13)) said first set of features being a subset of product features, (Satya figure 27, etc.) said first set of features surrounded with a number of identical features (fig. 15 A) and, a second set of features adjacent to said first set of features, (Satya abstract lines 6-8, Satya col. 37 lines 28 to 30),

a second set of features adjacent to said first set of features, said second set of features differing from said first set of features in polarity, said polarity referring to placement of an interior of a feature on one side of an edge versus on the other side of the edge (Satya paras 161, 164, 175 etc., plus inherent in every mirror image, figure 27, etc and Satya abstract lines 6-8, Satya col. 37 lines 28 to 30, similar to applicants' " pattern factor" defined in Applicants' specification as page 9 lines 1-2 see also Applicants' specification page 8 lines 19-end, etc.),

With respect to claim 2 Satya describes the structure of claim 1 wherein critical dimension (CD) is measured on said first set of features. (Stay figure 2, col. 8 lines 15-22).

With respect to claim 3 Satya describes the structure of claim 1 wherein said first set of features and said second set of features differ in spaces between features. (Staya figure 4D # 216 and 214)

With respect to claim 4 describes the structure of claim 1, wherein said first set of features and said second set of features differ in line widths of features. (Staya figure 4 D).

With respect to claim 5 describes the structure of claim 1 wherein said first set of features and said second set of features have the same pitch for features. (Satya figure 4C).

Claim Rejections - 35 USC Section 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action.

(a) A patent may not be obtained though the invention is not identically disclosed

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or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

B. Claims 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Satya et al. (U.S. Patent No. 6,528,818, herein after Satya) , as applied to claims 1-5 above and further in view of Gallarada et al (U.S. Patent No. 6,539,106 herein after Gallarada).

With respect to claim 6 Satya describes the structure of claim 1.

However Satya, does not describe wherein said first set of features comprises a first array of holes.

However, Gallarada in figure 4, col. 6 lines 36 to 48 describes wherein said first set of features comprises a first array of holes to identify defects of electrical significance, such as missing or incompletely formed contact holes and provide methods for inspection by matching of features between the images.

Therefore, it would have been obvious to one of ordinary skill in the art at the time for the invention to include Gallarada's teachings Of first set of features comprises a first array of holes, in Satya's first/second set of features. The motivation to make the above substitution is to identify defects of electrical significance, such as missing or incompletely formed contact holes and provide methods for inspection by matching of features between the images. (Gallarada col. 6 lines 40-47).

With respect to claim 7 describes the structure of claim 6 wherein said first array of holes comprises a 5 by-5 square array of holes. (Gallarada figure 5).

With respect to claim 8 describes the structure of claim 6 wherein said second set of features comprises a second array of holes. (Gallarada figure 5).

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With respect to claim 9 describes the structure of claim 8 wherein said second array of holes differs from said first array of. holes in size of array. (Gallarda figure 5 # 536 compared with other structures 526-534).

With respect to claim 10 describes the structure of claim 8 wherein said second array of holes differs from said first array of holes in space between holes. (Gallarda figures 18 A and E)

With respect to claim 11 describes the structure of claim 8 wherein said second array of holes differs from said first array of holes in line widths of holes.. (Staya figure 4D).

Response to Arguments

Applicant's arguments filed October 10/10/2008 have been fully considered but they are not persuasive for the following reasons :

In response to Applicants' piecemeal analysis of the references, it has been held that one cannot show nonobviousness by attacking references individually where, as here, the rejections are based on combinations of references.

In re Keller, 208 USPQ 871 (CCPA 1981).

Applicants' piece meal analysis that the primary reference Satya allegedly does not teach “the placement of a structure disposed near each corner of a die in a space at an intersection of a horizontal scribe line and a vertical scribe line “ is not persuasive because this limitation is presently only recited in the preamble of claim1.

It is well settled law that that a preamble is denied the effect of a limitation where the claim is drawn to a structure and the portion of the claim following the preamble is a self contained description of the structure not depending for completeness upon the introductory clause.

Kropa V Robie, 88 USPQ 478 (CCPA 1951).

The relevance of applicants' arguments stated in the first paragraph of page 6 is not fully understood , other than to restate as Applicants' have not identified what they are disputing, it can only be concluded that they agree with what was alleged to be stated by the Examiner in the first paragraph of page 6.

Applicants' next argument what Browning teachings has been responded to previously and restated here :

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(The last remaining clause of claim 1 is "wherein said second set of features occupies a smaller portion of said space than said first set of features".

Satya and Stearns do not specifically mention "wherein said second set of features occupies a smaller portion of said space than said first set of features".

However Browning in figure 4 and col. 4 lines 40-52 describes the second set of features spread across a smaller space than the first set (i.e. first set is larger oversized by about 10% to reduce the amount of extra metallic material deposited on dice such that bowing is eliminated and human error is virtually eliminated by creating the second mask key. (Browning col.2 lines 35-40). It is noted that Applicants' amending the claim 1 form "said second set of features occupying a smaller area than said first set of features "to said second set of features (occupying) spread across a smaller space (area) than said first set of features" is not sufficient to distinguish over the applied art of record for reasons set forth above and explained to Attorney Chen in two interviews.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include Browning's second set occupying a smaller area than said first set, in Satya's device to reduce the amount of extra metallic material deposited on dice such that bowing is eliminated and human error is virtually eliminated by creating the second mask key. (Browning col .2 lines 35-40).

It is noted that the presently newly added recitation "smaller area of said chip than said first set, said second set being distinguishable from other similar structures in the vicinity to provide uniqueness to said test structure" (emphasis supplied) is an inherent property of any area that are different in size i.e. occupying smaller area of the chip) will always constitute the area being distinguishable from other similar structures in the vicinity to provide uniqueness to said test structure e.g. first, second sets.

It is well known that the first set of features that are 10 % oversized have to occupy a larger area.

Applicants' and Attorney George Chen are respectfully requested to show evidence of any instance wherein 10 % bigger (oversized) feature will not occupy a larger area in the context of Applicants' specification as originally filed.

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Applicants' next contention regarding the Stearns reference Again not identifying what they dispute, it can only be concluded that they agree with what the Examiner stated regarding Stearns (reproduced below).

"In the opinion of the Examiner, Stearns et al. teaches performing the operations of scaling transformation, or rotation on an entire image or on any part thereof. However, Stearns et al. only teaches an affine transformation which means that the transformation always preserves the parallelism of lines in the input and output images. See col. 1 lines 30-37."

Stearns Co1.1 lines 30-37 describes prior art Therefore it is clear that by Applicants' and their Attorneys by attempting to limit a patent's (Stearns') teachings to "Stearns et al. only teaches an affine transformation which means that the transformation always preserves the parallelism of lines in the input and output images. See col. 1 lines 30-37." are either unable to understand the difference between a what a patent teaches as background or prior art And the improvements over this background or prior art described in the patent .

Therefore all of Applicants' arguments are not persuasive and the combination of the applied references namely Satya et al., Browning et al. and Stearns et al will produce the structure presently claimed by Applicants' in claims 1 and 2-5.

Applicants' also separately argue that because claims 2-5 depend upon allegedly allowable claim 1, they are also allowable.

However as shown above claim 1 is not allowable, therefore dependent claims 2-5 are also not allowable.

Applicants' separate contention that for reasons set out above also apply to claims 6 to 11 are also found to be not persuasive after extensive review and analysis hold true for the same arguments here also (claims 6 to 11) and is incorporated here by reference for the sake of brevity and compact prosecution.

Further with respect to claims 6 to 11 Applicants' contend that Gallarda can be allegedly distinguished because in Gallarda allegedly the reference image is taken at a location on a die while the test image is taken at the same location on a different die" cannot be given patentable weight because presently claims 6-11 recite :

6. (Original) The structure of claim I wherein said first set of features comprises a first array of holes.

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7. (Original) The structure of claim 6 wherein said first array of holes comprises a 5-by-5 square array of holes.

8. (Original) The structure of claim 6 wherein said second set of features comprises a second array of holes.

9.

(Original) The structure of claim 8 wherein said second array of holes differs from said first array of holes in size of array.

10. (Original) The structure of claim 8 wherein said second array of holes differs from said first array of holes in space between holes.

11. (Original) The structure of claim 8 wherein said second array of holes differs from said first array of holes in line widths of holes.

Therefore it clearly seen that none of claims 6-11 presently recite where [(at what locations) on die/s the image is taken) i.e. "the reference image is taken at a location on a die while the test image is taken at the same location on a different die].

It is restated that < " It is the claims that define the claimed invention, and it is claims not specification that are anticipated or un patentable. Constant V Advanced Micro Devices Inc. 7 USPQ 2d 1064. in re Self, 671 F.2d 1344, 213 USPQ 1 and 5 (CCPA 1982), In re Van Ornum and Stang, 686 F.2D. 937, 214 USPQ 761 (CCPA 1982).

Therefore all of Applicants' arguments are not persuasive and the combination of the applied references namely Satya et al., Browing et al. and Stearns et al will produce the structure presently claimed by Applicants' in claims 1 and 2-5 and the combination of Satya et al., Browing et al. and Stearns et al and Gallarda et al. will produce the structure presently claimed by Applicants' in claims 6-11.

Applicants' also separately argue that because claims 6-11 depend upon allegedly allowable claim 1, they are also allowable.

However as shown above claim 1 is not allowable, therefore dependent claims 6-11 are also not allowable.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEVEN H. RAO whose telephone number is (571)272-1718. The examiner can normally be reached on 8.30-5.30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1714. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven H Rao/
Examiner, Art Unit 2814

/Howard Weiss/
Primary Examiner, Art Unit 2814